MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019 / 2020

TSE 3351 – SOFTWARE EVOLUTION AND MAINTENANCE

(All sections / Groups)

7 MARCH 2020
2:30 P.M. – 4:30 P.M.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages (including cover page) with 6 Questions only.
2. Attempt **ANY FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please print all your answers in the Answer Booklet provided.

Question 1 (10 marks)

a) What is the difference between software evolution and software maintenance?

[2 Marks]

b) Explain the importance of Lehman's Laws of Evolution and how they are relevant to software maintenance activities.

[3 Marks]

c) Describe the Change Mini-cycle Model of software evolution. Illustrate your answer with a diagram.

[5 marks]

Question 2 (10 marks)

a) Explain ANY TWO measurements that can be used to assess software maintenance activities.

[4 marks]

b) Describe the contents of a Service-Level Agreement (SLA). How does it influence the software maintenance activities?

[4 marks]

c) Explain the types of software where its maintenance activities that could be outsourced.

[2 marks]

Continued...

Question 3 (10 marks)

a) Describe ANY TWO tools that can be used for program comprehension and reverse engineering. For each tool,

i. Explain the benefit of using the tool. [2 marks]

ii. Describe what the tool processes and give an example of the output(s) from the tool.

[4 marks]

b) An organization uses Customer Relationship Management (CRM) system for supporting software maintenance activities. Explain how a software maintainer can use the system to manage his/her tasks in maintaining a software product.

[4 marks]

Question 4 (10 marks)

Your team of programmers have just been assigned to maintain a Windows application developed by another team, who has been deployed to a new project at another country. There is some documentation on the requirements and design of the application, but the source codes have been maintained for a year and you are not sure of the validity of the existing documentation.

a) Discuss TWO possible strategies you can use to organized your team to understand the sources codes and validate the documentation.

[4 marks]

b) Explain, with example diagrams, how you can represent the Windows application using static model and dynamic model.

[4 marks]

c) Explain one refactoring method that can be used to improve the application.

[2 marks]

Continued...

Question 5 (10 marks)

a) Describe ANY TWO features of a Software Configuration Management (SCM) repository.

[2 marks]

b) When different team members are making changes to a software, how can a tool such as GitHub be used to control the changes made by the different team members? Explain with examples from your group assignment work.

[4 marks]

c) Briefly describe the main sections for Software Configuration Management Plan defined by IEEE Standards.

[4 marks]

Question 6 (10 marks)

One of the major banks in Malaysia (Bank A) recently bought a smaller bank (Bank B). Both banks have been in operation for more than 30 years and have computer systems from different vendors, with many similar applications for the banking operations. Bank A have more customers than Bank B so the database of Bank A is larger than Bank B.

a) Discuss TWO ways to integrate the two systems using wrappers. Illustrate your answer with suitable diagrams.

[6 marks]

b) The management of the bank decided to maintain only one database for both systems. Describe how the migration can be done so that both systems will access a single database after the migration process. Include any components to support this scenario.

[4 marks]

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